

**IN THE CLAIMS:**

Please amend the claims as follows:

1. - 21. (Canceled)

22. (Currently Amended) A method of simultaneously initializing a first and second antiferromagnetic layer in a magnetic sensor, the method comprising:

providing the sensor, wherein the sensor includes including an AP pinned substructure having a first ferromagnetic layer with the first antiferromagnetic layer exchange coupled to said first ferromagnetic layer, the sensor also including the second antiferromagnetic layer supporting magnetic bias stabilization of a free layer;  
~~comprising:~~

placing the sensor in an external magnetic field;

adjusting the magnitude of said magnetic field to an optimum value to cause the magnetization of said first ferromagnetic layer in said AP pinned substructure to be substantially perpendicular to the external magnetic field direction;

heating the sensor above the blocking temperature of both said first and second antiferromagnetic layers; and[[,]]

cooling the sensor below the blocking temperature of both the first and second antiferromagnetic layers in the presence of said external magnetic field.

23. (Currently Amended) A method of simultaneously initializing a first and second antiferromagnetic layer in a magnetic sensor, the method comprising:

providing the sensor, which includes the first antiferromagnetic layer exchanged coupled to a pinned layer and the second antiferromagnetic layer exchanged coupled to a ferromagnetic layer, said ferromagnetic layer comprising a portion of an AP pinned substructure supporting magnetic bias stabilization of a free layer;  
~~comprising:~~

placing the sensor in an external magnetic field;

adjusting the magnitude of said external magnetic field to an optimum value to cause the magnetization of said ferromagnetic layer in said antiparallel pinned substructure to be substantially perpendicular to the external magnetic field direction;

heating the sensor above the blocking temperature of both said first and second antiferromagnetic layers; and[[,]]

cooling the sensor below the blocking temperature of both the first and second antiferromagnetic layers in the presence of said external magnetic field.

24. (Currently Amended) A method of simultaneously initializing a first and second antiferromagnetic layer in a magnetic sensor, the method comprising:

providing the sensor, wherein the sensor includes including an AP pinned substructure having a first ferromagnetic layer with the first antiferromagnetic layer exchange coupled to said first ferromagnetic layer, the sensor also including the second antiferromagnetic layer supporting magnetic bias stabilization of a free layer;  
~~comprising:~~

placing the sensor in an external magnetic field;

adjusting the magnitude of said magnetic field to approximately 2200 Oe;

heating the sensor above the blocking temperature of both said first and second antiferromagnetic layers; and[[,]]

cooling the sensor below the blocking temperature of both the first and second antiferromagnetic layers in the presence of said external magnetic field.

25. (Currently Amended) A method of simultaneously initializing a first and second antiferromagnetic layer in a magnetic sensor, the method comprising:

providing the sensor , wherein the sensor ~~which~~ has the first antiferromagnetic layer exchanged coupled to a pinned layer and the second anti ferromagnetic layer exchanged coupled to a ferromagnetic layer, said ferromagnetic layer comprising a portion of an AP pinned substructure supporting magnetic bias stabilization of a free layer;  
~~comprising:~~

placing the sensor in an external magnetic field;  
adjusting the magnitude of said external magnetic field to approximately 2200  
Oe;  
heating the sensor above the blocking temperature of both said first and second  
anti ferromagnetic layers; and[[,]]  
cooling the sensor below the blocking temperature of both the first and second  
antiferromagnetic layers in the presence of said external magnetic field.